

Remarks

1. The Inventors accept the objection of the Examiner regarding the oath or declaration and enclose an amended version of it in compliance with 37 CFR 1.67(a)
2. The Inventors agree with the rejection of the Claims 1,2,3,4,5,6,7,8,9,14 under 35 U.S.C. 112, under 35 U.S.C. 103 (a) and under 35 U.S.C. 102 (b)
3. The Inventors note that as stated by the Examiner, the Claim10, if rewritten would be allowable to overcome the rejection under 35 U.S.C. 112 as being indefinite to distinctly claim the subject matter which applicants regard as the specific invention.
4. As pointed out by the Examiner (page 7 of the Office Action, item 12.),
“A process which includes the three steps as set forth in Claim 10, combined with the other steps required by the claims on which Claim 10 depends, is not described or suggested by any of the prior art of record”.
5. The present invention and specifically, Claim 10 suggests a three steps method of controlling the pressure inside the hollow inserts.
As mentioned earlier in the text of the application, the inserts are made hollow to facilitate pickling during the removal of the HIP tooling by acid pickling.
To keep them hollow during the HIP process, it is necessary to control the pressure inside the said inserts so that they do not collapse under the HIP pressure when sealed, and keep their shape and dimensions when connected to the HIP atmosphere.
6. However, if the cavities of the said inserts are vented and pressurized by the HIP pressure, as being anticipated by Van Daam et al. (U.S. Patent 6,482,533) at the very beginning of the HIP cycle, this pressure can destroy them and fail the process.

7. Therefore the said inserts must be vented and pressurized at a certain stage of the HIP process, when the powder material gets enough densified to transfer the pressure on the outer surface of these inserts.

8. Here comes the need for a three-step process to control the pressure inside the said hollow inserts. The process parameters to accomplish this control are the HIP pressure and temperature.

On the first step the cavity inside the said inserts is not vented and during HIP below the final HIP temperature of the sealed capsule with powder and inserts, (in the range of 0.5-0.9 of its value) the powder is densified and transfers the pressure onto the outer surface of the hollow inserts so that this pressure exceeds the external HIP pressure.

On the second step the cavity of the hollow inserts is connected to the HIP atmosphere.

On the third step during HIP of the capsule with the vented hollow inserts, densification of powder and shaping of the part with cavities is completed at the final HIP temperature and pressure without collapsing the hollow inserts.

9. The inventors consider that the amended Claim 10 as well as the new claims 15, 16 and 17 can now overcome the rejection under 35 U.S.C. 112 as being definite enough to distinctly claim the subject matter which applicants regard as the specific invention.

10. The inventors also consider that the amended Claim 10 as well as the new claims 15, 16 and 17 can now overcome the rejection under 35 U.S.C. 103a as being not described and suggested by any of the prior art of record and specifically in the referred Van Daam et al. (U.S. Patent 6,482,533), in view of Ritter et al. (US Patent 5,480,468) or Kratt et al. (U.S. Patent 6,210,633)

Summary

Applicants assert that amended Claim 10 and the new Claims 15 - 17 (see below the Request for Amendment on a separate page) are in a condition for allowance and respectfully request a notice as to the same.

REQUEST FOR AMENDMENT

This is the response to the Office Action mailed 01/23/2007 with respect to the above referenced application.

Please amend the application as follows:

IN THE CLAIMS:

Please, cancel Claims 1-9 and 14.

Please allow Claims 15-17 (New Claims) and Claim 10, which is rewritten so that this claim (together with the Claims 15-17) includes all the limitations of the previous base claim and any intervening claims.

Claim 10 (currently amended):

~~A method in accordance with the claim 6, wherein controlled pressure inside the HIP tooling is provided in three steps:~~ Method for manufacturing complex shape parts with cavities from powder materials by Hot Isostatic Pressing (HIP) in sealed capsules with hollow inserts and a vent tube by controlling pressure inside the inserts, comprising:

~~during the first step~~ Step 1. The said capsule ~~filled with powder and comprising hollow inserts not connected to the atmosphere~~ is HIPed below the final HIP temperature for the powder material so that the pressure on the outer surface of the hollow inserts exceeds the current HIP pressure.

~~during the second step the said capsule is cooled and~~ Step 2. The cavity of the hollow inserts is connected to the HIP atmosphere.

~~during the third step~~ Step 3. The said capsule is HIPed to the final HIP temperature providing the HIP pressure inside the hollow inserts by injecting the HIP gas media into the cavity of the said inserts.

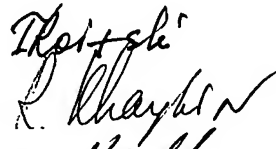
Claim 15 (New). A method in accordance with the Claim 10, wherein the said connection of the cavity in the hollow inserts to the HIP atmosphere is performed by cooling the capsule and opening the said vent tube.

Claim 16 (New). A method in accordance with the Claim 10, wherein the said connection of the cavity in the hollow inserts to the HIP atmosphere is done by perforating of a membrane installed inside the said vent tube by the HIP pressure below the final HIP pressure for the powder material.

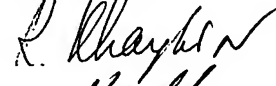
Claim 17 (New). A method in accordance with the Claim 10, wherein the said connection of the cavity in the hollow inserts to the HIP atmosphere is done by melting a plug installed inside the said vent tube below the final HIP temperature for the powder material.

Respectfully submitted

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